HP IO Accelerator Management Tool User Guide

Abstract

This document describes software requirements for all relevant HP IO Accelerators using Microsoft Windows or Linux operating systems. This document is intended for system administrators who plan to install and use HP IO Accelerators with a Microsoft Windows or Linux operating system. It is helpful to have previous experience with HP IO Accelerators and a Microsoft Windows or Linux operating system.

Part Number: 607715-003
February 2013
Edition: 3

Contents

HP IO Accelerator Management Tool

Introduction to HP IO Accelerator Management Tool

This document explains how to use the HP IO Accelerator Manager Management Tool to maintain the IO Accelerator at peak performance and troubleshoot any issues with the device.

The IO Accelerator Management Tool runs on both Windows and Linux platforms.

NOTE: All operating systems must be 64-bit architecture to support the IO Accelerator.

Linux

The IO Accelerator Management Tool application supports the following distributions:

- Red Hat Enterprise Linux 4, 5, and 6
- SUSE Linux Enterprise Server SLES10 and SLES11

Windows

The IO Accelerator Management Tool application runs on the following Windows platforms:

- Microsoft Windows XP Professional 64-Bit (with SP2 or higher)
- Windows Server 2003 64-Bit (with SP2 or higher)
- Windows Server 2008 64-Bit, all versions (with SP1 or higher)
- Windows Vista 64-bit, all versions

Software installation

The IO Accelerator Management Tool console application downloads as part of one of the following:

- Windows Setup package
- HP IO Accelerator Linux software installation package (for version 2.x and later)
- Linux HP IO Accelerator Management Tool installation package (for version 1.2.x)

The HP IO Accelerator installation packages are available on the HP website (http://www.hp.com/support).

Installing software using Linux

Beginning with the Linux 2.2 version of the IO Accelerator software, the IO Accelerator Management Tool is part of the package downloaded with the IO Accelerator driver software. If the latest IO Accelerator software is installed, see "Software overview (on page 8)."

To install the IO Accelerator installation software:

> **NOTE:** Running the IO Accelerator Management Tool requires administrator privileges. To run the installation, you must log in as Administrator, or, for Linux, as `root` or use the `sudo` command.

1. Go to the appropriate product page for your IO Accelerator:
   - HP IO Accelerator for BladeSystem c-Class (http://h20000.www2.hp.com/bizsupport/TechSupport/DriverDownload.jsp?prodNameId=3900936&lang=en&cc=us&prodTypeId=3709945&prodSeriesId=3900933&taskId=135)
   - HP PCIe IO Accelerator for ProLiant servers (http://h18004.www1.hp.com/products/servers/proliantstorage/solid-state/index.html?jumpid=reg_R1002_USEN)
2. Select your Linux distribution.
3. Download the HP IO Accelerator installation software.

Installing software using Windows operating systems

As part of the installation, the IO Accelerator Windows Setup program creates a shortcut for the IO Accelerator Management Tool and can create a desktop icon. The location is usually the installation directory, `C:\Program Files\HP IO Accelerator`.

License agreement

> **NOTE:** Running the IO Accelerator Management Tool requires administrator privileges. To run the installation, you must log in as Administrator, or, for Linux, as `root` or use the `sudo` command.

1. The first time you run the IO Accelerator Management Tool, it displays the EULA.
2. Click **Accept,** and continue to run the IO Accelerator Management Tool.

   NOTE: If you select **Decline,** the IO Accelerator Management Tool closes.

Software overview

The HP IO Accelerator Management Tool has five main tabs: Overview, Configuration, Alerts, Reports, and Settings.

The menu bar is static and appears at the top of the window regardless of the page you are viewing.

The right area of the menu bar includes a search box, the name of the user, and links to Logout and Help.

Each of the main pages has a sidebar on the left side of the screen that filters information appearing in the right part of the screen. The Overview and Configuration page sidebars are identical. When you click a selection in the Overview sidebar, the Configuration page automatically loads.

Performing searches

A Search box is active on the Configuration, Alerts, and Reports tab. Search is a quick method of filtering items based on a keyword.

Enhanced Search enables you to search for devices using a variety of attributes. For example, on the Configuration tab you can search attributes such as Adapter, Driver/Firmware, Formatting & Volume, Hardware, Host, and so on.

If a current search criteria is applied on any of the pages where the Search box is active, then that criteria appears at the top of the list as a search breadcrumb.

- Use **Enhanced Search** to add additional search criteria to the search breadcrumb
- Click the criteria itself to remove an item from the search criteria
- Click **Clear Search** to clear all the items in the breadcrumb

Paging and Refresh

On the Configuration and Alerts tabs, data is often presented as lists, tables, or grids. These tables or grids display 10 items per page, and you can use controls at the bottom of the grid to navigate through the pages. The following paging controls are available:

- Forward
- Back
- Last Page
- First Page
- Page Number—Enter the number of the page you want to view

At the bottom of these grids there is also a **Refresh** icon that forces the data in the grid to be updated. If you do not click **Refresh**, data currently displayed in the grid is automatically updated every 10 seconds.

In some cases, clicking the **Refresh** icon does not refresh the grid completely. In these cases, refreshing or reloading the browser content reformats the screen and updates the tables correctly.

Navigating the IO Accelerator Management Tool

You can navigate the IO Accelerator Management Tool using familiar keyboard controls:

- The **Tab** key moves the focus between on-screen components.
- The **Enter** key activates a selection.
- The **Scroll** keys (**Up Arrow, Down Arrow, PgUp, PgDn, Ctrl-Home, Ctrl-End,** and so on) control the Device Report panel scrolling.
- The **Esc** key closes dialog boxes.
- The **Ctrl-A** key combination selects all the available items in a list (such as all the IO Accelerators in the **Device Tree**).

Overview tab

The Overview tab summarizes key information gathered from all ioMemory storage devices, including IOPS, Reserve Space, and Temperature.

Current alerts appear on this tab.

Operations

Shows a historical trend of IOPS for all devices being managed by the HP IO Accelerator Management Tool.

Reserve Space

Reserve Space (as shown on the Overview tab) displays helpful information regarding the health of the device being monitored as determined by the percentage of reserve space available. The reserve space decreases as NAND blocks are retired, with write operations tending to wear out blocks faster than reads do.

An early warning message is sent by the driver when the amount of reserve is close to reaching the 10% available threshold. If the reserve space decreases to 0% of its original size, the device enters write-reduced mode (degraded) in order to prolong the lifespan of the device. Sometime after the reserve space is depleted, the device enters read-only mode and no further writes to the device can be done. If crossed, these thresholds and their accompanying messages should provide ample time for you to back up and migrate data on the device.

Go To Reports

Click this link to display the Reports tab.

Configuration tab

Device list

To the right of the sidebar is a grid that contains all items that match the currently-selected sidebar item.

Select the check box next to each device on which you want to perform an action, or click the device name to open its device page. For more information, see "Device page (on page 23)."

Columns

Click this link to select the information that is displayed for each device.

Pagination

If a search of ioMemory storage devices results in multiple pages, use the controls at the bottom of the list to move between result pages.

All ioMemory

The All ioMemory screen provides detailed information about the ioMemory devices, directCache cache instances, machines that host ioMemory devices, and clusters of which those host machines might be a part. You are able to perform maintenance and management tasks on several devices at once.

Low level format

Your IO Accelerator comes pre-formatted so it is not usually necessary to use this option. However, you might use it in the following circumstances:

- You must reformat the drive to change its logical size to enhance write performance.
- You are instructed to do so by HP Customer Support.

The IO Accelerator Management Tool performs a low-level format that is different from a format performed by an operating system using standard disk management utilities. You do not need to perform an IO Accelerator Management Tool low-level format to create an operating system-specific volume on the device.

⚠ **CAUTION:** Formatting an IO Accelerator destroys any data still on the device. If you have not backed up data to another device, choose **Cancel** to abort the format.

To format an IO Accelerator:

1. Select one or more IO Accelerators from the Device Tree.
2. Click **Format** to display the Low-Level Format window.
3. Select which type of format you want to perform:
    - **Factory Capacity**
    - **Maximum Capacity**—Creates the maximum possible capacity for user data on the device. This format is standard on a new IO Accelerator.
    - **Improved Performance**—Formats the device for increased write performance at the cost of approximately 30% capacity.

- **Maximum Performance**—Formats the device for maximum write performance at the cost of approximately 50% capacity.
- **Custom**—Select from the menu, or drag the line between Write Performance and Capacity in the graphic on the right of the window.

4. (Optional) Modify the sector size. Click the **Modify** link, and then enter a new sector size in bytes.

   CAUTION: Changing sector size to something other than 512 (factory default) can cause unexpected application behavior.

5. The selected devices appear as a group below the Write Performance/Capacity graphic. Click the arrow to the left of the group to reveal more details and the option to remove devices from the group, or click **Remove Group** to remove devices.

   If a device is unable to format (it is busy or the formatting is not valid for that particular device), it is displayed in the **Unavailable for Formatting** section at the bottom of the window.

6. Click **Format Devices**.

To exit without formatting any devices, click **Cancel**.

When the formatting process begins the **Config History** bar appears at the bottom of the screen.

Click the **PROCESSING** link to display a list of devices being updated. Click the **Skipped** link to display a list of devices that were selected but are not being updated. Each device's progress is shown in the sidebar. When the process is complete, the **Config History** bar shows how many devices were updated, how many failed, and how many devices were skipped or require reboot. Click the **SKIPPED**, **FAILED** or **REQUIRES REBOOT** link to see a list of those devices.

Click the arrow at the left of the **Config History** bar to expand the bar and display previous updates.

When the format completes, the IO Accelerator Management Tool automatically reattaches the newly-formatted IO Accelerators for use by the operating system.

Update firmware

The **Update Firmware** operation lets you upgrade the IO Accelerator firmware. Upgrade the firmware in the following circumstances:

- The IO Accelerator Management Tool displays a warning icon stating that the firmware is out of date.
- The Windows System Event Log or Linux system log (typically located in `/var/log/messages`) reports an issue due to out-of-date firmware.
- The IO Accelerator stops working.
- You are instructed to do so by HP Customer Support.

CAUTION: To avoid loss of data, back up the data on your IO Accelerator(s) prior to performing the upgrade.

CAUTION: Do not turn off the power during a firmware upgrade, because this might cause device failure. If a UPS is not in place, consider adding one to the system before performing a firmware upgrade.

CAUTION: Interrupting an update while it is in progress can result in permanent damage to the device. Do not use the Windows® Task Manager to stop the update or kill the process in Linux. For this same reason, the IO Accelerator Management Tool ignores all exit requests. If the

operation fails, you must restart this operation and complete it successfully before a reboot occurs to prevent damage to the device.

In most cases, if you upgrade the IO Accelerator firmware you must also upgrade the IO Accelerator driver. Most support issues arise from mismatched firmware and drivers. Upgrading the firmware might take some time. Monitor the progress using the Management Tool.

To properly complete the firmware upgrade of the device, you must perform a cold or warm boot of your system. The IO Accelerator Management Tool advises you which by displaying one of the following messages:

- `The firmware on the selected devices was successfully updated. Reboot your computer for the update to take effect.`
- `The firmware on the selected devices was successfully updated. Shut down your computer and restart for the update to take effect.`

To perform a firmware upgrade:

1. Download the IO Accelerator firmware upgrade file, and place it in a convenient directory.
2. Select the devices you want to upgrade in the Device Tree.
3. Click **Update Firmware**.
4. Select the IO Accelerator firmware file from the drop-down menu.
5. The selected ioMemory Storage Devices appear as a group below the Update firmware to drop-down menu. Click the arrow to the left of the group to display more details and the option to remove devices from the group, or click **Remove Group** to remove the devices from the Update Firmware dialog.

   If a device is unable to update (it is busy or updates are not available for that particular device), it appears in the **Unavailable to Update** section at the bottom of the window.
6. Click **Update Firmware**.

To exit without formatting any devices, click **Cancel**.

When the formatting process beings, the **Config History** bar appears at the bottom of the screen.

Click the **PROCESSING** link to see a list of devices being updated. Click the **Skipped** link to see a list of devices that were selected but are not being updated. Each device's progress is shown in the sidebar. When the firmware update process is complete, the **Config History** bar shows how many devices were updated, how many failed, and how many devices were skipped or require reboot. Click the **SKIPPED**, **FAILED** or **REQUIRES REBOOT** link to display a list of those devices.

Click the arrow at the left of the **Config History** bar to expand the bar and see previous updates.

Assign label

Assign Label lets you organize your devices into categories or groups. After a new label is created, it appears in the sidebar. Click on the label to display all devices belonging to that group.

When you create a new label, you can mark it as a Favorite by selecting the star icon. The label is included under your sidebar favorites. For more information, see "Labels (on page 21)." You can also create new labels on the **Settings** tab.

To create a new label:

1. Select one or more devices, and then click **Assign Label**.
2. Click the green plus button. The New Label menu appears.

3. Type in the label name, and then click **Save Label**.
4. To close the New Label window, click **Cancel** or the **X**.

Favorites

The Favorites feature lets you tag a label as a Favorite. All devices with that label appear in every page's sidebar (except the Settings page) under the Favorites heading. You can mark any label as a favorite, including your own labels and those created by other users.

Attach Device

The **Attach Device** operation creates a link so the IO Accelerator interacts with the operating system. In most cases, the operating system driver automatically attaches the installed IO Accelerators at boot time so you only need to use Attach Device when you manually detach an IO Accelerator (such as to perform a low-level format).

To attach a detached IO Accelerator and enable the operating system to interact with the device:

1. Select one or more detached IO Accelerators in the tree. They appear with the open link.
2. Click **Attach Device**. The IO Accelerator Management Tool asks you to confirm the attachment.

   If the selected drive is already attached, the **Attach** button is grayed out.
3. Click **Attach** to confirm the operation.

   Attach Device connects the device. The Attach Device operation progress bar also appears in the **Device Report** panel indicating the percentage completed. When the **Attach** operation finishes, the following message appears.



   When this message appears, the device is attached and available to the operating system.

   If the **Attach Device** operation fails, an error message appears.

Attaching mixed attached/detached devices

If you select a set of IO Accelerators to attach where some are attached and some are detached, the **Confirm Attach** dialog box displays a list of the drives and their statuses.

When you click **Attach,** the IO Accelerator Management Tool connects only the detached devices (those marked **Ready**).

Detach Device

Detach Device disconnects your IO Accelerator from the operating system. The device is not accessible to users or applications. Use **Attach Device** to make it accessible again. You should only need to detach an IO Accelerator to perform a low-level format or a firmware upgrade.

To detach a device:

1. Select one or more IO Accelerators from the Device Tree. You can only detach attached devices.
2. Click **Detach.** The IO Accelerator Management Tool console will ask you to confirm.
3. Click **Detach.** If the selected device is already detached, the **Detach** button is grayed out.

As each device detaches, the following message appears.



Use **Attach** to restore the operating system access to the IO Accelerator.

Detaching mixed attached/detached devices

If you select a set of IO Accelerators to detach where some are attached and some are detached, the **Confirm Detach** dialog box displays a list of the drives and their statuses.

When you click **Detach,** the IO Accelerator Management Tool disconnects only the attached devices (those marked **Ready**).

All Cache

This table displays the name of the cache, its status (Enabled or Disabled), the ioMemory in use, the Hostname, the Cluster Name, and the Backing Store Device Name. The backing store device is the name of the device being cached. All of these links take you to the Device page except the Cluster Name, which takes you to a table showing all the hosts that are part of the cluster.

Remove

Removes the caching relationship of a caching device to a backing store and restores the device and backing store to their previous, unbound state.

Enable

Re-enables caching of a bound backing store and creates a cache block device.

Disable

Halts caching and prepares a cache and backing store for system power down or for maintenance. To re-enable the caching, click **Enable**.

All Hosts

Select **All Hosts** from the sidebar to display all host-relevant information, such as Hostname, HostIP (the host's IP address), Hosts Online (whether the selected host is online or offline), and the Host OS (Linux or Windows). The serial number or the alias of the drive displays under the heading Drives. The Cluster Name is displayed last.

The Format, Update Firmware, and Attach buttons apply to all devices attached to the selected hosts.

All Clusters

This screen displays the Cluster Name, the Cluster IP Address, and the Master Host. The **Columns** link lets you add or remove the Cluster IP Address and the Master Host name.

Alerts tab

This page lists current and historical alerts for ioMemory devices and cache instances. Alerts are for recording or notification purposes. There are three types of alerts that are recorded and displayed in the alerts section:

- Error—An error or problem has occurred
- Warning—A condition has occurred that might cause a problem in the future
- Info—Useful information

Active Alerts

Active alerts are conditions that are persistent and need to be corrected, or that have occurred recently and must be acknowledged and archived. The number of active alerts corresponds with the number displayed on the Alerts tab.

Sidebar - Alerts History

All Alerts (active or archived) that occurred within the last year can be viewed in any of the groups listed under **Alerts History** in the sidebar. You can filter the results by clicking one of the factory or custom searches in the sidebar.

Alerts List

Click the device Host name or Item name to go to Device view. You can filter the displayed Alerts using several methods: All | Warnings | Errors | Info

Click one of these links to filter the alerts by type or All.

For the Last ___ Days

Show alerts for the selected time span (the last 365, 128, or 10 days).

Columns

Click this link to select what information is displayed in the list for each device.

Archive

Alerts are automatically cleared from the Active Alerts grid when the condition that caused them no longer exists. You can manually archive Alerts that are present due to a user-created Alert Rule and those that are a result of a failed configuration operation. Click the **Archive** link to the right of the alert in the alert list. Archived alerts are still viewable in the Alert History.

Reports tab

Operations and Data

Click to display information about Operations (IOPS) or Data Volume (Data). The selected information's corresponding button at the bottom of the graph is highlighted. You can also click the Operations or Data boxes to display their information in the graph.

Date Range

Select the start and end dates for the time range you want to display.

Read and Write Buttons

Click **Read** or **Write** under the graph to show or hide their data.

Reports Sidebar

Click these factory or custom links to filter the devices information that appears in the graph.

Settings tab

Use the Settings page to manage remote access options, local accounts and identity providers, alert rules, SMTP server options, subscribers, device labels, and saved searches.

Some features on the Settings page are only available to a Server Admin.

Saved Searches

Saved searches let you easily return to a previous search multiple times. After a saved search is created on the ioMemory, Alerts, or Reports tab, you can come here to rename it, mark it as a favorite, or delete it.

Rename

To rename a saved search, click on the name and type your changes.

Favorite

To change to the Favorite settings of a saved search, click the star icon next to the name. A yellow star means it is a favorite, an empty start means it is not.

Delete

To delete a saved search, click on the **Delete** link next to the name.

Only an administrator can edit saved searches created by other users, but anyone can add another user's saved search to their favorites.

Remote Access

Configure user and host remote access settings on this page.

ioMemory Push Frequency

Optionally, enter the ioMemory Push Frequency. The default is 15 seconds. Increasing this number causes updates to be less frequent (and history/report information less detailed). Decreasing this number causes updates to be more frequent, but could affect performance if you are using many clients (for example, more than 20 or 30).

Increasing this number above 600 displays this message: `A high push frequency will potentially result in data being out of date.`

Enable Remote Access

Allows remote access to the Management Server from Agent processes not located on the same machine as the Management Server.

Advertise Using Zeroconf

Causes the Management Server to advertise its service using the Zeroconf service discovery protocol. This allows remote Agent services to automatically discover and communicate with the Management Server.

The Zeroconf protocol requires that Avahi be installed on Linux operating systems and Bonjour be installed on Windows operating systems.

Host Name

Enter an IP address that will not change in an uncontrolled way (such as a DHCP lease that expires). This address is used by Agent services to communicate to the Management Server.

Port

By default, the port is set to 9051, which is reserved worldwide and should not conflict with any other applications. You can change the port (for example, to 443) depending on your requirements.

Use pre-configured SSL Certificate

A pre-configured certificate is provided, but results in "untrusted certificate" messages. It is less secure than using a certificate made specifically for your server that is signed by a trusted CA.

Use my own custom SSL Certificate

Select this option to update your own Key, Certificate, and CA Chain.

Remote Access Key

To manually configure an Agent to communicate with the Management Server, you can download a remote access key and install it on Agent machines. This action might be required in cases where Advertisement has been disabled (either by configuration or due to lack of Zeroconf support), or the network has multiple Management Servers.

Agents

There are two ways to grant access to Agents: click the box next to the Agent name, and then click **Grant Access**, or click the link to the right of each Agent name. After an Agent is authorized, a username and password are established in the database, and the Agent has a full access key.

Database

History Database

You can adjust the size of your history database by specifying how many days to include in the historical data. Click **Save Changes** when you are done.

By default, the application keeps the last 30 days of data. This can be modified to store up to two years.

Backup Database

Click **Backup** to create a `tbz2` file of the entire database named `xxxx-backup-<id_number>.tbz2`.

Local Accounts

Create and manage user accounts and user roles.

Add User

To add a new user, click the **Add User** link. Enter a unique username, password, and assign the user's role, which affects that user's permissions.

Edit User

To edit a user, click the username link.

Delete User

To delete a user, click the **Delete** link in the Delete column.

Bulk Actions...

Use the check boxes next to each user to select an action to apply to all selected users (Enable, Disable, or Delete).

Change Role to...

Use the check boxes next to each user to assign a role and grant that role's rights to all selected users.

Changing passwords

To change a user password, click a username in the Local Accounts (on page 19) screen (located under the Settings tab). To change your password while you are logged in, click your user name in the upper right corner of the screen. Either action results in the Edit User dialog appearing.

Click **Change Password** to change the user password.

Resetting the Admin Password

If you change another user's password, you do not need to enter the old password, and you must be an Administrator. However, when you change the admin's account password, you must enter the old password.

If you forget your admin password, you can reset it by running `fio-msrv -w` at the command line.

Identity Providers

Currently only LDAP identity providers are supported.

Add LDAP

Click this link to open the Add LDAP wizard, where you can configure the LDAP connection, User Mapping, Role Mapping, test LDAP settings, and add additional LDAP configurations.

Edit LDAP

To edit an LDAP entry, click the **Provider** link.

Delete LDAP

To delete an LDAP entry, click the **Delete** link next to the provider.

For more information, see "Adding and editing LDAP Providers (on page 26)."

Rules

Create, edit, and review rules that generate alerts.

Add Rule

To add a rule:

1. Click the **Add Rule** link to open the Add Alert dialog, where you can create a custom filter that will send an alert.
2. In the Add Alert dialog, click **Add search parameter** or (if you have one or more saved searches) **Add Saved Search**. When you add a saved search, its parameters are automatically added to the new Alert.

3. Click **Next Step**.
4. Click the plus sign next to the Add Search Parameter button to add additional parameters to the alert.
5. Click **Next Step**.
6. Add additional information about the alert, including Alert Type, Alert Name, Alert Description, and Alert Status. You can also click the **Edit Parameters** link to go back and add, remove, or change parameters.
7. Click **Add Alert** to add the alert, or the **Cancel** link to discard the alert.

Edit Rule

To edit custom rule entry, click the **Rule** link.

Delete Rule

To delete a custom rule entry, click the **Delete** link next to the Rule.

Only custom rules can be modified and deleted.

SMTP Server

To send alert emails, you must first configure the SMTP server settings on this page. After you enter in the correct parameters, click **Save Changes** to save and test the SMTP settings.

Subscribers

The application can send email alerts to standard or SMS email addresses. After configuring the SMTP server settings, you can create subscribers and assign them to receive specific alerts.

Click the **Add Subscriber** link to open the Add Subscriber dialog where you can enter a standard or SMS email address and assign the subscriber to be notified when an alert is Set or Cleared.

Edit Subscriber

To edit a subscriber, click the subscriber email address link.

Delete Subscriber

To delete a subscriber, click the **Delete** link next to the subscriber.

Email To SMS

Most mobile carriers offer free Email To SMS gateways, which can be used to forward simple text emails to a mobile phones. Check with your provider to determine your Email to SMS email address.

Labels

Labels are used to organize your devices into categories or groups. After a label is created on the **Configuration** tab, you can come to this page to rename it, mark it as a favorite, or delete it.

Rename

To rename a label, click the name and type your changes.

Favorite

To change the Favorite settings of a label, click the star icon next to the label name. A yellow star means it is a favorite, an empty start means it is not.

Delete

To delete a label, click the **Delete** link next to the name.

Other Users' Labels

While only an Administrator can edit labels created by other users, anyone can add another users' label to their favorites.

Device page

The Device page provides a way to monitor and configure devices controlled by a single Agent service. There are two ways to navigate to the Device page:

- Click a hostname link from any table in the application.
- Click an ioMemory link or Cache Instance name link from any table in the IO Accelerator Management Tool.

When the Device Page displays, information pertaining to the server running the Agent service appears in the upper left corner. A left sidebar lists each ioMemory device installed in that server, and a tab panel on the right monitors and lets you perform configuration tasks.

The Configure and Info tabs include the **FIO BUG REPORT** link in the lower right corner. Click this link to compile and download a bug report for the selected device when instructed to do so by HP Customer Support.

Configure tab

Edit the following settings from this page:

- Alias (Name, by default the serial number is used)
- Labels/Change Labels link
- Status (Attach/Detach)

  The Attach Device operation creates a link so the device interacts with the operating system. In most cases, the operating system driver automatically attaches the installed devices at boot time, so you only need to use Attach Device when you manually detach a device (such as to perform a low-level format).

  Detach Device disconnects your device from the operating system. After the device is detached, it is not accessible to users or applications. You must use Attach Device to make it accessible. You should only need to detach a device to perform a low-level format or a firmware upgrade.
- Swap Support (Enable/Disable)

  Devices can be used as swap space. By enabling swap here, you are enabling the device for use as a swap space. This allows the driver to preallocate the memory needed for the device to be used as swap.

  When you select Enable, the device is ready to be used as swap space, but your operating system must configured to use the device as swap. You must configure the system to use the device in that manner.

  You must have 400MB of free RAM per 80GB of device capacity, formatted to 4KB block size, to enable a device for use as swap. Enabling swap without sufficient RAM results in the loss of user processes and causes system instability.
- Beacon (Enable/Disable)

  The Beacon feature causes the selected device's LEDs to blink, making it easier to find among several devices.

You can also update firmware and perform a low-level reformat.

directCache

The directCache software lets you use an ioMemory module as a cache in front of a slower storage volume called a backing store.

The backing store can be any block storage device, ranging from a single local drive within the server to a RAID, an iSCSI client, or even a Fibre Channel attached LUN on a storage area network SAN.

Use directCache in the following circumstances:

- You need a large capacity of block-storage devices, such as disk drives, at the speed of NAND-based flash in a cost-effective model.
- You are looking for the highest-performance-per-dollar storage systems.
- You have applications that can use solid state storage to increase performance and reduce latency, have high-cost SAN implementations, and are looking for ways to boost performance but reduce total cost of ownership.
- You have implemented high-cost storage SATA- or SAS-based drives but have not met latency or performance needs.

Information on directCache is on the Configure tab. There are also some directCache features you can activate from this screen. The most obvious task you can perform is to add another cache, by clicking on the **Add Cache** or **Add Another** link if there are no existing cache instances. A window opens over the Configure tab.

- If your cache is controlled by cluster management software, click the **This cache is controlled by cluster management software** check box.
- **Backing Store list**—This list shows all the storage devices that are able to be cached.
- **Alias**—A short name that helps you remember this cache device.
- **Handle**—The handle is useful for identifying a cache instance when the paths (for example, `/dev/fdc0a`) might be less easily recognizable. You can specify a memorable label for this cache instance resource, though it is not required. The handle can include all alphanumeric characters except for "/?.:*~'`# or | and must not begin or end with a space character.
- **Add Another**—Click to add another cache device.

When you are done adding cache devices, click **Configure**.

The Config History footer displays the progress of the creation of the new cache instances you have added.

directCache Information

From the Configure tab, you can view the following directCache-related information:

- **Driver Version**—The version number of the installed directCache software.
- **Cache Alias**—The alias you gave the cache when you created it. Click the **Change** link to change the alias.
- **Handle**—If a cache handle exists it is listed here.
- **Status**—Shows if your cache is enabled or disabled. You can use the link to disable or enable your cache.
- **Backing Store**—Displays the path of the storage device being cached. To remove the cache and restore the backing store to its original, non-cached state, click the **Remove** link next to the Backing Store path.
- **Backing Store Size**—Displays the size of the backing store device.

Click **More Information** to display a list of other important directCache information, such as Read Sector and Requests, how many Hits and Misses of each, and how many reads were rejected due to infrequent use.

Live tab

The Live tab lets you monitor important information for one or several devices in real time. The Live tab displays IOPS Read/Write when **Operations** is selected, MB/Second when **Data** is selected, and Temperature and Reserve Space. Select **Data** or **Operations** using the large button above the graph.

The Live tab also displays information for PBW Endurance.

Reports tab (Device Page)

The Reports tab shows from three to five history graphs for a single device: Operations, Data & Endurance, Temperature, Cache Hit Requests, and Cache Latency. Cache Hit Requests and Cache Latency are available only when the device is being used as a cache. Enter start and end dates in the menus above the graph to show data for different dates.

- **Operations**—Click to display IOPS. The selected button is highlighted. Operations displays the average Read and Write hits as the amount of IOPS.
- **Data & Endurance**—Displays the Average Read and Write hits in Bytes per second.

  Each device has a PBW Rating. The device warranty is based on this PBW Rating.

  When Data & Endurance is selected, the following message appears above the graph: `Future performance based on this date range suggests X PBW Usage Warranty will last for more than X years.`

  If the date range selected is not an accurate representation of the anticipated future performance of the device, you can modify the date range to include data that better represents future behavior and thereby include a better prediction of the warranty expiration.
- **Temperature**—The data shows you how temperature changes over time over days or throughout a day.
- **Cache Hit Requests**—This charts the percent of read requests that were serviced from the cache.
- **Cache Latency**—The graph shows Cache Latency for Read Hits, Read Misses, and Read Average.

Info tab

The Info tab provides details about a single device, including recent alerts.

The Info tab also shows adapter Information, such as kind of board (single or duo), the serial number, and PCIe Bus voltage, current, power, and bandwidth.

The directCache part of the page is the same page that is displayed when you click the **More Details...** link in the Configure tab.

Adding and editing LDAP providers

Adding and editing LDAP providers

You can create multiple LDAP configurations to coordinate with multiple directories deployed within your organization. This section describes how to add and edit LDAP providers.

To begin, go to **Settings** > **Identity Providers**, and then click **Add LDAP**. The Add LDAP dialog appears.

Adding a new LDAP provider

The Add LDAP window contains four sections: Connection, User Mapping, Role Mapping, and Test LDAP Settings. Start with the Connection section.

Connection

To create a connection:

1. Enter a name for the LDAP configuration in the Name field. For example: `Corporate Directory`.
2. Enter the hostname (DNS or IP address) and port for the primary LDAP server in the Primary Server fields. If multiple LDAP servers are used to access the directory, you can enter a secondary hostname and port in the Backup Mirror field.

   For security purposes, HP recommends that you mark the **Use SSL** check box for your configured LDAP servers.

   The HP IO Accelerator Management Tool does not have a facility for importing the LDAP server public key. Instead, it automatically trusts the server certificate when performing the SSL handshake.
3. The default Base DN field is optional. If your users or groups are located below a common branch in your LDAP tree, enter the DN for that branch here. This field is only used to make it easier to configure the user mapping and role mappings later.
4. Enter the timeout period.

   The timeout used for making server connections and for searching as specified in the Timeout field. The HP IO Accelerator Management Tool always uses the smaller of the timeout you specify plus 20 seconds. This prevents the web application from encountering connection timeout problems.
5. Select the **Authentication Required** check box to dis-allow anonymous searching. Enter the DN and Password for the identity that will be used to perform searches in the LDAP directory.

   Best security practices call for a "least privileged user" to be created in the LDAP directory and is used for this purpose. This user is granted rights to perform LDAP search operations in the portions of the tree where users and groups reside.

   The Auth DN and Password are securely stored in the Management Solution, but if the **Use SSL** check box is not selected, then these credentials can be seen by others with the use of a network traffic sniffer.
6. Click **Test Connection** to ensure that your configuration steps thus far are correct. The test will do the following:
   a. Connect to the LDAP Servers specified.
   b. Perform a StartTLS operation if the servers have the **Use SSL** check box selected.

c. Perform an LDAP Bind with the Auth DN and Password, if one is specified.

Any errors encountered are displayed at the top of the window.

When finished, click **Next Step** to display User Mapping.

User mapping

A primary function of the LDAP Provider is to take a username (like jdoe) and password, and verify that the username maps to an entry in the LDAP server, and that the user's LDAP entry along with their password can be used to authenticate to the LDAP directory.

The application gives you two ways to map usernames to LDAP entries: an easy DN Builder (essentially a DN template), and a traditional search-based mapping configuration.

DN Builder

In some LDAP deployments, all users reside in a single, flat container (such as `OU=people,DC=example,DC=com`), and all users are named with a common naming attribute (such as `UID`). In this case, it is easier to use the DN Builder to configure the User Mapping. To map a username such as jdoe to an LDAP entry of `UID=jdoe,OU=people,DC=example,DC=com`, type `UID` into the template left field, and `OU=people,DC=example,DC=com` into the right.

An example DN is shown below the Template fields in the form of `UID=${username},OU=people,DC=example,DC=com`. This shows you what the resulting username map will be, where the string "`${username}`" is replaced with the username entered, when a user attempts to login.

Search

The traditional method of mapping a username to an LDAP entry is to search for the username as a unique value of the entry that represents the user. For example, ActiveDirectory deployments often populate an attribute called `sAMAccountName` with the username. Other directory deployments might populate the UID attribute with the username.

Enter the DN of the tree branch that is hierarchically above your user entries (for example, `OU=people,DC=example,DC=com`). If you previously entered a Default Base DN, you can select it from the drop-down list.

For the search filter, you can add one or more attributes to the Search Attributes field and a search filter is automatically created. For example, if your user entries have a `UID` attribute that holds their unique username, typing UID into the Search Attributes field produces a standard LDAP search filter of `(UID=${username})`.

If you need a specialized search filter, you can edit it in the Search Filter field. Use the radio buttons to toggle between entering attributes and editing the search filter.

The special token "`${username}`" is replaced with the name the user is attempting to log in with when the HP IO Accelerator Management Tool performs the authentication.

The **Scope** should normally be set to Subtree. It can be set to One Level if the users are all in a single container.

Click **Next Step** to proceed to Role Mapping.

Role mapping

Connection and User Mapping configure the way a username is mapped to an LDAP entry. Role Mapping configures the ways in which users are granted roles.

Role Mapping Rules are used to place a user into one or more roles in the HP IO Accelerator Management Tool: User, Device Admin, or Server Admin.

Each role mapping is essentially an LDAP search specification along with a Role. When the search specification is true (returns one or more entries) for a user, then that user is granted the Role.

To create a new role mapping:

1. Click **Add Role Mapping**.
2. Enter a name for this mapping in the Name field. This name lets you identify the role mapping later if you decide to edit it. For example: `Administrators`.
3. Enter a DN in the Search Base DN field.

   This could be the DN of some container, or a specific DN such as that of a group, for example, `CN=administrators,OU=groups,DC=example,DC=com`. The special value `${dn` can be used to set the search base DN to the user's LDAP entry. This is useful when creating a role mapping based of the user's attributes, such as `memberOf`.
4. Enter an LDAP search filter in the Search Filter field.

   The search filter can contain the special values `${username,}`which is replaced by the name the user logged in with, or `${dn},` which is replaced by the DN of the logged-in user's LDAP entry). For example, a search filter of `(member=${dn})` matches true for entries where there is a member attribute that has the logged-in user's DN as a value (common in group entries).
5. Set the Scope.

   If the Search Base DN names a specific entry in the LDAP tree, the scope should be Base level; otherwise it should be either Subtree or One level.
6. Choose the Role to be granted to users meeting the search criteria. For example, if the search criteria matches true for users who are listed in and LDAP group entry full of administrators, set the role to Server Admin.
7. Click **Add Role Mapping**.

Example Role Mappings

Following are some examples of role mappings that might be configured for different LDAP directory deployments:

Members of the Administrator group are in role Server Admin

1. Set the Search Base DN field to the Administrators group entry. For example: `CN=administrators,OU=groups,DC=example,DC=com`.
2. Set the Search Filter: `(member=${dn})"` (typical for AD) or `(uniqueMember=${dn})` (typical for non-AD). If you are unsure which attribute holds the members of the group, you can use the search filter `(|(member=${dn})(uniqueMember=${dn})).`
3. Set the Scope to Base level.
4. Set the Role to Server Admin.

Members of the Administrator group are in role Server Admin (alternate AD config)

Sometimes in Active Directory, and some other LDAP deployments, a user is given group membership by placing an attribute on the user's entry, for example `memberOf`. This role mapping grants the same role as above for these cases:

1. Set the Search Base DN field to the user's entry: `${dn}`.
2. Set the Search Filter: `(memberOf=CN=administrators,OU=groups,DC=example,DC=com)`.
3. Set the Scope to Base level.
4. Set the Role to Server Admin.

Users who have the title of manager are in the Device Admin role

In this scenario, use an attribute called `title` on the user object to determine whether they are in the Device Admin role.

1. Set the Search Base DN field to the user's entry: `${dn}`.
2. Set the Search Filter: `(title=manager)`.
3. Set the Scope to Base level.
4. Set the Role to Device Admin.
5. Click **Next Step** to test your settings.

Grant a specific user the Server Admin role

There might be situations where a specific user is not in a group, but needs to be in a role. This can be done by creating search criteria that matches true only for that user.

1. Set the Search Base DN field to the user's entry: `${dn}`.
2. Set the Search Filter: `(sAMAccountName=jdoe)`.
3. Set the Scope to Base level.
4. Set the Role to Server Admin.

Grant the User role to everyone who is able to authenticate

If you want everyone who is able to log in to have at least the User role, do the following:

1. Set the Search Base DN field to the user's entry: `${dn}`.
2. Set the Search Filter: `(objectclass=*)`.
3. Set the Scope to Base level.
4. Set the Role to User.

Test LDAP settings

This section provides information on testing your connection, user mapping, and role mappings configuration.

Type the name of a user into the User field, for example `jdoe`, and then click **Test**.

The results of the test display in a step-by-step manner. Each step also contains timing information. This can be helpful in fine-tuning your user mapping and role mappings.

Results should be similar to the following:

```
setup: 0 seconds.
Connection succeeded. Endpoint: ldaps://ldap.example.com:389
bind: 0 seconds.
Using search to resolve user. Base: ou=people,dc=example,dc=com Scope:
```

```
subtree Filter: (samaccountname=jdoe)
resolve: 0 seconds.
Resolved jdoe to CN=John Doe,OU=People,DC=example,DC=com
total resolve time: 0 seconds.
Attempting role map: {base: ${dn}, filter: (objectclass=*), scope: 0} to
test user: jdoe for role(s): (Server Admin, Device Admin, User). ${username}
= jdoe. ${dn} = CN=John Doe,OU=People,DC=example,DC=com
resolve roles: 0 seconds.
Found match with role map: {base: ${dn}, filter: (objectclass=*), scope: 0}
In role(s): (User)
total resolve and role calculation time: 0 seconds.
```

Support and other resources

Before you contact HP

Be sure to have the following information available before you call HP:

- Active Health System log (HP ProLiant Gen8 or later products)

  Download and have available an Active Health System log for 3 days before the failure was detected. For more information, see the *HP iLO 4 User Guide* or *HP Intelligent Provisioning User Guide* on the HP website (http://www.hp.com/go/ilo/docs).
- Onboard Administrator SHOW ALL report (for HP BladeSystem products only)

  For more information on obtaining the Onboard Administrator SHOW ALL report, see the HP website (http://h20000.www2.hp.com/bizsupport/TechSupport/Document.jsp?lang=en&cc=us&objectID=c02843807).
- Technical support registration number (if applicable)
- Product serial number
- Product model name and number
- Product identification number
- Applicable error messages
- Add-on boards or hardware
- Third-party hardware or software
- Operating system type and revision level

HP contact information

For United States and worldwide contact information, see the Contact HP website (http://www.hp.com/go/assistance).

In the United States:

- To contact HP by phone, call 1-800-334-5144. For continuous quality improvement, calls may be recorded or monitored.
- If you have purchased a Care Pack (service upgrade), see the Support & Drivers website (http://www8.hp.com/us/en/support-drivers.html). If the problem cannot be resolved at the website, call 1-800-633-3600. For more information about Care Packs, see the HP website (http://pro-aq-sama.houston.hp.com/services/cache/10950-0-0-225-121.html).

Customer Self Repair

HP products are designed with many Customer Self Repair (CSR) parts to minimize repair time and allow for greater flexibility in performing defective parts replacement. If during the diagnosis period HP (or HP service

providers or service partners) identifies that the repair can be accomplished by the use of a CSR part, HP will ship that part directly to you for replacement. There are two categories of CSR parts:

- **Mandatory**—Parts for which customer self repair is mandatory. If you request HP to replace these parts, you will be charged for the travel and labor costs of this service.
- **Optional**—Parts for which customer self repair is optional. These parts are also designed for customer self repair. If, however, you require that HP replace them for you, there may or may not be additional charges, depending on the type of warranty service designated for your product.

NOTE: Some HP parts are not designed for customer self repair. In order to satisfy the customer warranty, HP requires that an authorized service provider replace the part. These parts are identified as "No" in the Illustrated Parts Catalog.

Based on availability and where geography permits, CSR parts will be shipped for next business day delivery. Same day or four-hour delivery may be offered at an additional charge where geography permits. If assistance is required, you can call the HP Technical Support Center and a technician will help you over the telephone. HP specifies in the materials shipped with a replacement CSR part whether a defective part must be returned to HP. In cases where it is required to return the defective part to HP, you must ship the defective part back to HP within a defined period of time, normally five (5) business days. The defective part must be returned with the associated documentation in the provided shipping material. Failure to return the defective part may result in HP billing you for the replacement. With a customer self repair, HP will pay all shipping and part return costs and determine the courier/carrier to be used.

For more information about HP's Customer Self Repair program, contact your local service provider. For the North American program, refer to the HP website (http://www.hp.com/go/selfrepair).

Réparation par le client (CSR)

Les produits HP comportent de nombreuses pièces CSR (Customer Self Repair = réparation par le client) afin de minimiser les délais de réparation et faciliter le remplacement des pièces défectueuses. Si pendant la période de diagnostic, HP (ou ses partenaires ou mainteneurs agréés) détermine que la réparation peut être effectuée à l'aide d'une pièce CSR, HP vous l'envoie directement. Il existe deux catégories de pièces CSR:

Obligatoire - Pièces pour lesquelles la réparation par le client est obligatoire. Si vous demandez à HP de remplacer ces pièces, les coûts de déplacement et main d'œuvre du service vous seront facturés.

Facultatif - Pièces pour lesquelles la réparation par le client est facultative. Ces pièces sont également conçues pour permettre au client d'effectuer lui-même la réparation. Toutefois, si vous demandez à HP de remplacer ces pièces, l'intervention peut ou non vous être facturée, selon le type de garantie applicable à votre produit.

REMARQUE: Certaines pièces HP ne sont pas conçues pour permettre au client d'effectuer lui-même la réparation. Pour que la garantie puisse s'appliquer, HP exige que le remplacement de la pièce soit effectué par un Mainteneur Agréé. Ces pièces sont identifiées par la mention "Non" dans le Catalogue illustré.

Les pièces CSR sont livrées le jour ouvré suivant, dans la limite des stocks disponibles et selon votre situation géographique. Si votre situation géographique le permet et que vous demandez une livraison le jour même ou dans les 4 heures, celle-ci vous sera facturée. Pour bénéficier d'une assistance téléphonique, appelez le Centre d'assistance technique HP. Dans les documents envoyés avec la pièce de rechange CSR, HP précise s'il est nécessaire de lui retourner la pièce défectueuse. Si c'est le cas, vous devez le faire dans le délai indiqué, généralement cinq (5) jours ouvrés. La pièce et sa documentation doivent être retournées dans l'emballage fourni. Si vous ne retournez pas la pièce défectueuse, HP se réserve le droit de vous facturer les coûts de remplacement. Dans le cas d'une pièce CSR, HP supporte l'ensemble des frais d'expédition et de retour, et détermine la société de courses ou le transporteur à utiliser.

Pour plus d'informations sur le programme CSR de HP, contactez votre Mainteneur Agrée local. Pour plus d'informations sur ce programme en Amérique du Nord, consultez le site Web HP (http://www.hp.com/go/selfrepair).

Riparazione da parte del cliente

Per abbreviare i tempi di riparazione e garantire una maggiore flessibilità nella sostituzione di parti difettose, i prodotti HP sono realizzati con numerosi componenti che possono essere riparati direttamente dal cliente (CSR, Customer Self Repair). Se in fase di diagnostica HP (o un centro di servizi o di assistenza HP) identifica il guasto come riparabile mediante un ricambio CSR, HP lo spedirà direttamente al cliente per la sostituzione. Vi sono due categorie di parti CSR:

Obbligatorie – Parti che devono essere necessariamente riparate dal cliente. Se il cliente ne affida la riparazione ad HP, deve sostenere le spese di spedizione e di manodopera per il servizio.

Opzionali – Parti la cui riparazione da parte del cliente è facoltativa. Si tratta comunque di componenti progettati per questo scopo. Se tuttavia il cliente ne richiede la sostituzione ad HP, potrebbe dover sostenere spese addizionali a seconda del tipo di garanzia previsto per il prodotto.

NOTA: alcuni componenti HP non sono progettati per la riparazione da parte del cliente. Per rispettare la garanzia, HP richiede che queste parti siano sostituite da un centro di assistenza autorizzato. Tali parti sono identificate da un "No" nel Catalogo illustrato dei componenti.

In base alla disponibilità e alla località geografica, le parti CSR vengono spedite con consegna entro il giorno lavorativo seguente. La consegna nel giorno stesso o entro quattro ore è offerta con un supplemento di costo solo in alcune zone. In caso di necessità si può richiedere l'assistenza telefonica di un addetto del centro di supporto tecnico HP. Nel materiale fornito con una parte di ricambio CSR, HP specifica se il cliente deve restituire dei componenti. Qualora sia richiesta la resa ad HP del componente difettoso, lo si deve spedire ad HP entro un determinato periodo di tempo, generalmente cinque (5) giorni lavorativi. Il componente difettoso deve essere restituito con la documentazione associata nell'imballo di spedizione fornito. La mancata restituzione del componente può comportare la fatturazione del ricambio da parte di HP. Nel caso di riparazione da parte del cliente, HP sostiene tutte le spese di spedizione e resa e sceglie il corriere/vettore da utilizzare.

Per ulteriori informazioni sul programma CSR di HP contattare il centro di assistenza di zona. Per il programma in Nord America fare riferimento al sito Web HP (http://www.hp.com/go/selfrepair).

Customer Self Repair

HP Produkte enthalten viele CSR-Teile (Customer Self Repair), um Reparaturzeiten zu minimieren und höhere Flexibilität beim Austausch defekter Bauteile zu ermöglichen. Wenn HP (oder ein HP Servicepartner) bei der Diagnose feststellt, dass das Produkt mithilfe eines CSR-Teils repariert werden kann, sendet Ihnen HP dieses Bauteil zum Austausch direkt zu. CSR-Teile werden in zwei Kategorien unterteilt:

Zwingend – Teile, für die das Customer Self Repair-Verfahren zwingend vorgegeben ist. Wenn Sie den Austausch dieser Teile von HP vornehmen lassen, werden Ihnen die Anfahrt- und Arbeitskosten für diesen Service berechnet.

Optional – Teile, für die das Customer Self Repair-Verfahren optional ist. Diese Teile sind auch für Customer Self Repair ausgelegt. Wenn Sie jedoch den Austausch dieser Teile von HP vornehmen lassen möchten, können bei diesem Service je nach den für Ihr Produkt vorgesehenen Garantiebedingungen zusätzliche Kosten anfallen.

HINWEIS: Einige Teile sind nicht für Customer Self Repair ausgelegt. Um den Garantieanspruch des Kunden zu erfüllen, muss das Teil von einem HP Servicepartner ersetzt werden. Im illustrierten Teilekatalog sind diese Teile mit „No" bzw. „Nein" gekennzeichnet.

CSR-Teile werden abhängig von der Verfügbarkeit und vom Lieferziel am folgenden Geschäftstag geliefert. Für bestimmte Standorte ist eine Lieferung am selben Tag oder innerhalb von vier Stunden gegen einen Aufpreis verfügbar. Wenn Sie Hilfe benötigen, können Sie das HP technische Support Center anrufen und sich von einem Mitarbeiter per Telefon helfen lassen. Den Materialien, die mit einem CSR-Ersatzteil geliefert werden, können Sie entnehmen, ob das defekte Teil an HP zurückgeschickt werden muss. Wenn es erforderlich ist, das defekte Teil an HP zurückzuschicken, müssen Sie dies innerhalb eines vorgegebenen Zeitraums tun, in der Regel innerhalb von fünf (5) Geschäftstagen. Das defekte Teil muss mit der zugehörigen Dokumentation in der Verpackung zurückgeschickt werden, die im Lieferumfang enthalten ist. Wenn Sie das defekte Teil nicht zurückschicken, kann HP Ihnen das Ersatzteil in Rechnung stellen. Im Falle von Customer Self Repair kommt HP für alle Kosten für die Lieferung und Rücksendung auf und bestimmt den Kurier-/Frachtdienst.

Weitere Informationen über das HP Customer Self Repair Programm erhalten Sie von Ihrem Servicepartner vor Ort. Informationen über das CSR-Programm in Nordamerika finden Sie auf der HP Website unter (http://www.hp.com/go/selfrepair).

Reparaciones del propio cliente

Los productos de HP incluyen muchos componentes que el propio usuario puede reemplazar (*Customer Self Repair*, CSR) para minimizar el tiempo de reparación y ofrecer una mayor flexibilidad a la hora de realizar sustituciones de componentes defectuosos. Si, durante la fase de diagnóstico, HP (o los proveedores o socios de servicio de HP) identifica que una reparación puede llevarse a cabo mediante el uso de un componente CSR, HP le enviará dicho componente directamente para que realice su sustitución. Los componentes CSR se clasifican en dos categorías:

- **Obligatorio:** componentes para los que la reparación por parte del usuario es obligatoria. Si solicita a HP que realice la sustitución de estos componentes, tendrá que hacerse cargo de los gastos de desplazamiento y de mano de obra de dicho servicio.
- **Opcional:** componentes para los que la reparación por parte del usuario es opcional. Estos componentes también están diseñados para que puedan ser reparados por el usuario. Sin embargo, si precisa que HP realice su sustitución, puede o no conllevar costes adicionales, dependiendo del tipo de servicio de garantía correspondiente al producto.

NOTA: Algunos componentes no están diseñados para que puedan ser reparados por el usuario. Para que el usuario haga valer su garantía, HP pone como condición que un proveedor de servicios autorizado realice la sustitución de estos componentes. Dichos componentes se identifican con la palabra "No" en el catálogo ilustrado de componentes.

Según la disponibilidad y la situación geográfica, los componentes CSR se enviarán para que lleguen a su destino al siguiente día laborable. Si la situación geográfica lo permite, se puede solicitar la entrega en el mismo día o en cuatro horas con un coste adicional. Si precisa asistencia técnica, puede llamar al Centro de asistencia técnica de HP y recibirá ayuda telefónica por parte de un técnico. Con el envío de materiales para la sustitución de componentes CSR, HP especificará si los componentes defectuosos deberán devolverse a HP. En aquellos casos en los que sea necesario devolver algún componente a HP, deberá hacerlo en el periodo de tiempo especificado, normalmente cinco días laborables. Los componentes defectuosos deberán devolverse con toda la documentación relacionada y con el embalaje de envío. Si no enviara el componente defectuoso requerido, HP podrá cobrarle por el de sustitución. En el caso de todas

sustituciones que lleve a cabo el cliente, HP se hará cargo de todos los gastos de envío y devolución de componentes y escogerá la empresa de transporte que se utilice para dicho servicio.

Para obtener más información acerca del programa de Reparaciones del propio cliente de HP, póngase en contacto con su proveedor de servicios local. Si está interesado en el programa para Norteamérica, visite la página web de HP siguiente (http://www.hp.com/go/selfrepair).

Customer Self Repair

Veel onderdelen in HP producten zijn door de klant zelf te repareren, waardoor de reparatieduur tot een minimum beperkt kan blijven en de flexibiliteit in het vervangen van defecte onderdelen groter is. Deze onderdelen worden CSR-onderdelen (Customer Self Repair) genoemd. Als HP (of een HP Service Partner) bij de diagnose vaststelt dat de reparatie kan worden uitgevoerd met een CSR-onderdeel, verzendt HP dat onderdeel rechtstreeks naar u, zodat u het defecte onderdeel daarmee kunt vervangen. Er zijn twee categorieën CSR-onderdelen:

Verplicht: Onderdelen waarvoor reparatie door de klant verplicht is. Als u HP verzoekt deze onderdelen voor u te vervangen, worden u voor deze service reiskosten en arbeidsloon in rekening gebracht.

Optioneel: Onderdelen waarvoor reparatie door de klant optioneel is. Ook deze onderdelen zijn ontworpen voor reparatie door de klant. Als u echter HP verzoekt deze onderdelen voor u te vervangen, kunnen daarvoor extra kosten in rekening worden gebracht, afhankelijk van het type garantieservice voor het product.

OPMERKING: Sommige HP onderdelen zijn niet ontwikkeld voor reparatie door de klant. In verband met de garantievoorwaarden moet het onderdeel door een geautoriseerde Service Partner worden vervangen. Deze onderdelen worden in de geïllustreerde onderdelencatalogus aangemerkt met "Nee".

Afhankelijk van de leverbaarheid en de locatie worden CSR-onderdelen verzonden voor levering op de eerstvolgende werkdag. Levering op dezelfde dag of binnen vier uur kan tegen meerkosten worden aangeboden, indien dit mogelijk is gezien de locatie. Indien assistentie gewenst is, belt u een HP Service Partner om via de telefoon technische ondersteuning te ontvangen. HP vermeldt in de documentatie bij het vervangende CSR-onderdeel of het defecte onderdeel aan HP moet worden geretourneerd. Als het defecte onderdeel aan HP moet worden teruggezonden, moet u het defecte onderdeel binnen een bepaalde periode, gewoonlijk vijf (5) werkdagen, retourneren aan HP. Het defecte onderdeel moet met de bijbehorende documentatie worden geretourneerd in het meegeleverde verpakkingsmateriaal. Als u het defecte onderdeel niet terugzendt, kan HP u voor het vervangende onderdeel kosten in rekening brengen. Bij reparatie door de klant betaalt HP alle verzendkosten voor het vervangende en geretourneerde onderdeel en kiest HP zelf welke koerier/transportonderneming hiervoor wordt gebruikt.

Neem contact op met een Service Partner voor meer informatie over het Customer Self Repair programma van HP. Informatie over Service Partners vindt u op de HP website (http://www.hp.com/go/selfrepair).

Reparo feito pelo cliente

Os produtos da HP são projetados com muitas peças para reparo feito pelo cliente (CSR) de modo a minimizar o tempo de reparo e permitir maior flexibilidade na substituição de peças com defeito. Se, durante o período de diagnóstico, a HP (ou fornecedores/parceiros de serviço da HP) concluir que o reparo pode ser efetuado pelo uso de uma peça CSR, a peça de reposição será enviada diretamente ao cliente. Existem duas categorias de peças CSR:

Obrigatória – Peças cujo reparo feito pelo cliente é obrigatório. Se desejar que a HP substitua essas peças, serão cobradas as despesas de transporte e mão-de-obra do serviço.

Opcional – Peças cujo reparo feito pelo cliente é opcional. Essas peças também são projetadas para o reparo feito pelo cliente. No entanto, se desejar que a HP as substitua, pode haver ou não a cobrança de taxa adicional, dependendo do tipo de serviço de garantia destinado ao produto.

OBSERVAÇÃO: Algumas peças da HP não são projetadas para o reparo feito pelo cliente. A fim de cumprir a garantia do cliente, a HP exige que um técnico autorizado substitua a peça. Essas peças estão identificadas com a marca "No" (Não), no catálogo de peças ilustrado.

Conforme a disponibilidade e o local geográfico, as peças CSR serão enviadas no primeiro dia útil após o pedido. Onde as condições geográficas permitirem, a entrega no mesmo dia ou em quatro horas pode ser feita mediante uma taxa adicional. Se precisar de auxílio, entre em contato com o Centro de suporte técnico da HP para que um técnico o ajude por telefone. A HP especifica nos materiais fornecidos com a peça CSR de reposição se a peça com defeito deve ser devolvida à HP. Nos casos em que isso for necessário, é preciso enviar a peça com defeito à HP dentro do período determinado, normalmente cinco (5) dias úteis. A peça com defeito deve ser enviada com a documentação correspondente no material de transporte fornecido. Caso não o faça, a HP poderá cobrar a reposição. Para as peças de reparo feito pelo cliente, a HP paga todas as despesas de transporte e de devolução da peça e determina a transportadora/serviço postal a ser utilizado.

Para obter mais informações sobre o programa de reparo feito pelo cliente da HP, entre em contato com o fornecedor de serviços local. Para o programa norte-americano, visite o site da HP (http://www.hp.com/go/selfrepair).

カスタマーセルフリペア

修理時間を短縮し、故障部品の交換における高い柔軟性を確保するために、HP製品には多数のCSR部品があります。診断の際に、CSR部品を使用すれば修理ができるとHP（HPまたはHP正規保守代理店）が判断した場合、HPはその部品を直接、お客様に発送し、お客様に交換していただきます。CSR部品には以下の2通りがあります。

- **必須 -** カスタマーセルフリペアが必須の部品。当該部品について、もしもお客様がHPに交換作業を依頼される場合には、その修理サービスに関する交通費および人件費がお客様に請求されます。
- **任意 -** カスタマーセルフリペアが任意である部品。この部品もカスタマーセルフリペア用です。当該部品について、もしもお客様がHPに交換作業を依頼される場合には、お買い上げの製品に適用される保証サービス内容の範囲内においては、別途費用を負担していただくことなく保証サービスを受けることができます。

注： HP製品の一部の部品は、カスタマーセルフリペア用ではありません。製品の保証を継続するためには、HPまたはHP正規保守代理店による交換作業が必須となります。部品カタログには、当該部品がカスタマーセルフリペア除外品である旨が記載されています。

部品供給が可能な場合、地域によっては、CSR部品を翌営業日に届くように発送します。また、地域によっては、追加費用を負担いただくことにより同日または4時間以内に届くように発送することも可能な場合があります。サポートが必要なときは、HPの修理受付窓口に電話していただければ、技術者が電話でアドバイスします。交換用のCSR部品または同梱物には、故障部品をHPに返送する必要があるかどうかが表示されています。故障部品をHPに返送する必要がある場合は、指定期限内（通常は5営業日以内）に故障部品をHPに返送してください。故障部品を返送する場合は、届いた時の梱包箱に関連書類とともに入れてください。故障部品を返送しない場合、HPから部品費用が請求されます。カスタマーセルフリペアの際には、HPは送料および部品返送費を全額負担し、使用する宅配便会社や運送会社を指定します。

客户自行维修

HP 产品提供许多客户自行维修 (CSR) 部件，以尽可能缩短维修时间和在更换缺陷部件方面提供更大的灵活性。如果在诊断期间 HP（或 HP 服务提供商或服务合作伙伴）确定可以通过使用 CSR 部件完成维修，HP 将直接把该部件发送给您进行更换。有两类 CSR 部件：

- **强制性的** — 要求客户必须自行维修的部件。如果您请求 HP 更换这些部件，则必须为该服务支付差旅费和人工费用。
- **可选的** — 客户可以选择是否自行维修的部件。这些部件也是为客户自行维修设计的。不过，如果您要求 HP 为您更换这些部件，则根据为您的产品指定的保修服务类型，HP 可能收取或不再收取任何附加费用。

注：某些 HP 部件的设计并未考虑客户自行维修。为了满足客户保修的需要，HP 要求授权服务提供商更换相关部件。这些部件在部件图解目录中标记为“否”。

CSR 部件将在下一个工作日发运（取决于备货情况和允许的地理范围）。在允许的地理范围内，可在当天或四小时内发运，但要收取额外费用。如果需要帮助，您可以致电 HP 技术支持中心，将会有技术人员通过电话为您提供帮助。HP 会在随更换的 CSR 部件发运的材料中指明是否必须将有缺陷的部件返还给 HP。如果要求您将有缺陷的部件返还给 HP，那么您必须在规定期限内（通常是五 (5) 个工作日）将缺陷部件发给 HP。有缺陷的部件必须随所提供的发运材料中的相关文件一起返还。如果未能送还有缺陷的部件，HP 可能会要求您支付更换费用。客户自行维修时，HP 将承担所有相关运输和部件返回费用，并指定快递商/承运商。

有关 HP 客户自行维修计划的详细信息，请与您当地的服务提供商联系。有关北美地区的计划，请访问 HP 网站 (http://www.hp.com/go/selfrepair)。

客戶自行維修

HP 產品設計了許多「客戶自行維修」(CSR) 的零件以減少維修時間，並且使得更換瑕疵零件時能有更大的彈性。如果在診斷期間 HP（或 HP 服務供應商或維修夥伴）辨認出此項維修工作可以藉由使用 CSR 零件來完成，則 HP 將直接寄送該零件給您作更換。CSR 零件分為兩種類別：

- **強制的** — 客戶自行維修所使用的零件是強制性的。如果您要求 HP 更換這些零件，HP 將會向您收取此服務所需的外出費用與勞動成本。
- **選購的** — 客戶自行維修所使用的零件是選購的。這些零件也設計用於客戶自行維修之用。不過，如果您要求 HP 為您更換，則可能需要也可能不需要負擔額外的費用，端視針對此產品指定的保固服務類型而定。

備註：某些 HP 零件沒有消費者可自行維修的設計。為符合客戶保固，HP 需要授權的服務供應商更換零件。這些零件在圖示的零件目錄中，被標示為「否」。

基於材料取得及環境允許的情況下，CSR 零件將於下一個工作日以快遞寄送。在環境的允許下當天或四小時內送達，則可能需要額外的費用。若您需要協助，可致電「HP 技術支援中心」，會有一位技術人員透過電話來協助您。不論損壞的零件是否必須退回，HP 皆會在與 CSR 替換零件一起運送的材料中註明。若要將損壞的零件退回 HP，您必須在指定的一段時間內（通常為五 (5) 個工作天），將損壞的零件寄回 HP。損壞的零件必須與寄送資料中隨附的相關技術文件一併退還。如果無法退還損壞的零件，HP 可能要向您收取替換費用。針對客戶自行維修情形，HP 將負責所有運費及零件退還費用並指定使用何家快遞/貨運公司。

如需 HP 的「客戶自行維修」方案詳細資訊，請連絡您當地的服務供應商。至於北美方案，請參閱 HP 網站 (http://www.hp.com/go/selfrepair)。

고객 셀프 수리

HP 제품은 수리 시간을 최소화하고 결함이 있는 부품 교체 시 더욱 융통성을 발휘할 수 있도록 하기 위해 고객 셀프 수리(CSR) 부품을 다량 사용하여 설계되었습니다. 진단 기간 동안 HP(또는 HP 서비스 공급업체 또는 서비스 협력업체)에서 CSR 부품을 사용하여 수리가 가능하다고 판단되면 HP는 해당 부품을 바로 사용자에게 보내어 사용자가 교체할 수 있도록 합니다. CSR 부품에는 두 가지 종류가 있습니다.

- **고객 셀프 수리가 의무 사항인 필수 부품.** 사용자가 HP에 이 부품의 교체를 요청할 경우 이 서비스에 대한 출장비 및 작업비가 청구됩니다.
- **고객 셀프 수리가 선택 사항인 부품.** 이 부품들도 고객 셀프 수리가 가능하도록 설계되었습니다. 하지만 사용자가 HP에 이 부품의 교체를 요청할 경우 사용자가 구입한 제품에 해당하는 보증 서비스 유형에 따라 추가 비용 없이 교체가 가능할 수 있습니다.

참고: 일부 HP 부품은 고객 셀프 수리가 불가능하도록 설계되었습니다. HP는 만족스러운 고객 보증을 위해 공인 서비스 제공업체를 통해 부품을 교체하도록 하고 있습니다. 이러한 부품들은 Illustrated Parts Catalog에 "No"라고 표시되어 있습니다.

CSR 부품은 재고 상태와 지리적 조건이 허용하는 경우 다음 영업일 납품이 가능하도록 배송이 이루어집니다. 지리적 조건이 허용하는 경우 추가 비용이 청구되는 조건으로 당일 또는 4시간 배송이 가능할 수도 있습니다. 도움이 필요하시면 HP 기술 지원 센터로 전화하십시오. 전문 기술자가 전화로 도움을 줄 것입니다. HP는 결함이 발생한 부품을 HP로 반환해야 하는지 여부를 CSR 교체 부품과 함께 배송된 자료에 지정합니다. 결함이 발생한 부품을 HP로 반환해야 하는 경우에는 지정된 기간 내(통상 영업일 기준 5일)에 HP로 반환해야 합니다. 이 때 결함이 발생한 부품은 제공된 포장 재료에 넣어 관련 설명서와 함께 반환해야 합니다. 결함이 발생한 부품을 반환하지 않는 경우 HP가 교체 부품에 대해 비용을 청구할 수 있습니다. 고객 셀프 수리의 경우, HP는 모든 운송 및 부품 반환 비용을 부담하며 이용할 운송업체 및 택배 서비스를 결정합니다.

HP 고객 셀프 수리 프로그램에 대한 자세한 내용은 가까운 서비스 제공업체에 문의하십시오. 북미 지역의 프로그램에 대해서는 HP 웹 사이트(http://www.hp.com/go/selfrepair)를 참조하십시오.

For more information

For additional information, see the following HP websites:

- HP BladeSystem technical resources (http://www.hp.com/go/bladesystem/documentation) (white papers and support documents)
- HP BladeSystem components (http://h18004.www1.hp.com/products/blades/components/c-class-compmatrix.html)
- HP support (http://www.hp.com/support)

Subscription service

HP recommends that you register your product at the Subscriber's Choice for Business website (http://www.hp.com/support).

After registering, you will receive e-mail notification of product enhancements, new driver versions, firmware updates, and other product resources.

Acronyms and abbreviations

IOPS

input/output operations per second

NAND

Not AND

PBW

Petabytes Written Rating

RHEL

Red Hat Enterprise Linux

Documentation feedback

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Index

S

T

U